

In the Specification:

Please enter the following changes to the specification. Applicant submits that all changes are consistent with the written description and drawings as originally filed, as would be understood by one having skill in the art. Accordingly, Applicant submits that no new matter is presented by these changes.

[Para 2] The present invention relates to a device for monitoring a welding area of an object ~~in connection with~~ during a welding process. The device comprises (includes, but is not necessarily limited to) means for reproduction of the welding area, at least one filter arranged in front of, or in the reproduction means, and means for illumination of the welding area with ultraviolet radiation. The reproduction means can consist of, for example, a video camera, and in particular, those of the CCD (Charge Couple Device) type. An image produced is suitably displayed on a TV monitor. In a complementary embodiment, the invention also relates to a method for monitoring the welding area.

[Para 3] The present invention moreover relates to an arrangement for controlling a welding operation, while the operation is ongoing, comprising means for welding, a monitoring device as above, means for processing an image produced by the reproduction means, and means for controlling one or more welding parameters and/or the position of the welding head on the basis of information from the image. The invention furthermore relates to a method for controlling the welding operation.

[Para 12] Another object of the invention is to provide an arrangement for controlling a welding operation, while it is ongoing, which affords opportunities for a welded article with a higher weld quality in relation to the prior art.

[Para 13] This object is achieved by an arrangement comprising a monitoring device which further comprises means for reproduction of the welding area, at least one filter arranged in front of or in the reproduction means, and means for illumination of the welding area with ultraviolet radiation. The filter comprises a band- pass filter that is adapted for filtering around a wavelength within the ultraviolet wavelength range. The arrangement also comprises computer means for processing an image produced by the reproduction means, and means for controlling one or more welding parameters and/or the position of the welding head of the welding means on the basis of information from the image.

[Para 17] This object is achieved by virtue of the fact that the welding area is illuminated with ultraviolet radiation, the welding area being reproduced, the radiation from the welding area in a direction toward a means for the reproduction being filtered, filtering being carried out with a band-pass filter around a wavelength within the ultraviolet wavelength range, and an image produced by the reproduction means being processed by computer and one or more welding parameters and/or the position of a welding head being controlled on the basis of information from the image.

[Para 24] Figs 1 and 2 show a first embodiment of an arrangement 1 for controlling a welding operation configured according to the teachings of the present invention. The control arrangement 1 comprises a device 2 for monitoring, or supervising, a welding area of an object 14 while the welding operation is under way. The device 2 comprises means 3 for reproduction of the welding area, which means 3 consists of a camera, a band-pass filter 4 arranged in front of a lens 1 5 of the camera, and means 5 for illumination of the welding area with ultraviolet radiation. The reproduction means 3 and the illumination means 5 are arranged generally near, and on the same side of, a welding means 7, in the form of a welding robot, and more specifically behind the melt 22 in the welding direction. The object 14 can consist of, for example, two plates to be welded together.

[Para 47] Figure 3 illustrates a second preferred embodiment of the arrangement of illumination means (light guide) 5, band-pass filter 4 and reproduction means (camera) 3. Here, the camera 3 is arranged on the opposite side of the welding means 7 in relation to the light guide 5. The camera 3 and the light guide 5 are also mounted on the welding head 7 via a diagrammatically illustrated holder, or a frame, 23 so as to be held generally near the welding means 7. The welding means 7 is intended to be moved in a direction toward the right in the figure (see arrow 17); that is to say, along the joint to be welded, the light guide 5 and the camera 3 remaining in front of and, respectively, behind the welding area during welding.